say or think now of these new births at the average of over 1000 a year. The "examination of this large number of new names, as regards prior occupation," the Editor states was necessarily superficial, we quite sympathise with him; before we read his footnote we rushed into the subject with the A's, but on turning over to page 2 we saw how matters stood and we gave the critical business up at once, and it was obvious at a glance that the greatest genus maker of the year was Ernest Haeckel.

The year 1881 showed a lull so far as the works on recent Mammalia were concerned—at least in comparison with 1880—but the flood of new extinct mammalian forms from North America shows no sign of abatement. In 1881 the lamented Balfour completed his excellent and masterlike treatise on Embryology. The account of the Mammalia in Messrs. Salvin and Godman's work on the Biology of Central America has been finished, and Peters and Doria have published an important work on the Mammals of New Guinea.

The contribution to Bird Literature has been considerable, and the year was marked by the appearance of two more volumes of the Catalogue of the Birds in the British Museum (vols. v. and vi.). Among the Reptiles, Batrachians, and Fishes, no work of any very special importance seems to have appeared. Dr. von Martens still records the Mollusca and Crustacea. The record of the former group extends to 108 pages, and of the latter to 38 pages; both are most painstakingly executed.

The literature of the Arachnida is more extensive than usual, and the year's work is marked by the appearance of several important contributions by the Recorder, Holmberg, Karsch, Keyserling, Koch, Pavesi, Simon, and Thorell, so that it is evident that the Arachnid treasures of the world are at last being worked. Among the Myriopods, Cantoni's Monograph of the Lombardy forms seems to call for notice.

The enormous group of Insecta is recorded by Mr. Kirby, with the exception of the Neuroptera and Orthoptera, which fall to the skilled hands of Mr. McLachlan.

The Vermes and Echinoderms are recorded by Prof. Jeffrey Bell; the Cœlenterata by A. G. Bourne and Sydney J. Hickson. It is remarkable that not a single new genus or species of any recent Octactiniæ seems to have appeared in 1881, nor indeed any separate paper on the group. The Sponges and Protozoa have engaged the attention of Stuart O. Ridley; while nothing very striking seems to occur among the Sponge literature. Kent's Manual of Infusoria, and Haeckel's Prodomus of the Radiolaria mark the year; among the Protozoa, the latter work records 483 new genera and 2000 new species —an almost embarassing number of pretty things.

We are truly glad that the importance of this Record is still practically witnessed to by the generous help rendered to the Zoological Record Association by the British Association for the Advancement of Science and by the Grant Committee of the Royal Society.

OUR BOOK SHELF

The Brewer, Distiller, and Wine Manufacturer. (London: J. and A. Churchill, 1883.)

THE little work before us is the first of a series of technological handbooks to be issued by the publishers, "each of which will be complete in itself, will appear in a handy form and at a low price." Practically they will be a re-issue of articles in Cooley's "Cyclopædia of Practical Receipts and Collateral Information in the Arts, Manufactures, Professions, and Trades," with a somewhat fuller treatment and with reference to the more recent developments which have taken place in industrial processes. As this, the first of these handbooks, treats of Alcohol and Alcoholimetry, Brewing and Beer, Cider, Liqueurs and Cordials, Distillation of Alcoholic Liquors, and lastly, Wine and Wine Making, necessarily much of the Encyclopædic form of treatment must remain, when such important industries are discussed in so small a compass.

Though we cannot endorse the statement of the publishers, that each handbook will be *complete* in itself, we are compelled to admit that the Editor has given a remarkably well condensed *précis* of what has been written on industrial fermentation processes.

The first chapter describes the sources of alcohol, its detection in liquids, and its estimation by volume and by weight: numerous tables are given for this purpose. In addition to the usual distillation process, the methods of Balling, Gröning, Brossard-Vidal, Silbermann, Geissler, and others are described; this part of the book must prove of much use to the technologist.

Brewing is described in fifty pages; this is sufficient to show how condensed the treatment of one of the largest industries in the kingdom must necessarily be. Brief though it be the Editor deserves the highest praise for the manner in which he has condensed the vast mass of facts now accumulated in this department of fermentation chemistry. In addition to the description of the English processes of malting, mashing, and fermentation, a brief account is given of the German Lager beer system now almost universal on the continents of Europe and North America. This is supplemented by a large number of elaborate analyses of English and "Lager" beers, showing the characteristic differences in the products of the two methods. Brief though this part of the handbook is, it will be found of interest to the general reader and of value to the practical brewer, who may not have hitherto given much attention to the scientific part of his manufacturing process.

In Chapter V. we have a full account of the mashing and fermentation processes adopted by the distiller and rectifier, including the methods followed by the latter to remove some of the fusel oils and to flavour "still" spirit so as to produce gins, whiskies, &c., of various taste and aroma. A useful feature in this part of the work will be found in the descriptions and drawings of the stills of Coffey, Siemens, Derosne, Laugier, Dorn, Pistorius, Pontifex and Wood, and others; this will be found of much interest to distillers, more especially in our colonies, where technical information is more difficult to obtain than in the old country.

The sixth and last chapter treats of Wine and its Manufacture.

After a brief description of the soils and manures best suited to the culture of the vine, we have an enumeration and description of some of the better known wines, such as Lafitte, Latour, Margaux, Haut Brion, Leoville, and other red wines of the Gironde, and of the white Graves, as Sauterne, Barsac, Château Yquem, Latour, &c.; of the Burgundies, Romanée Conti, Chambertin, Clos Vougeot, Clos St. George, and La Tache, and of some of the wines of the Champagne, Beaujolais and other vine districts of France.

A brief account is given of the so-called Hocks of the Rhine, and those of the valleys of the Moselle, Ahn, and other rivers of Germany. In the description given of wine-making some use is made of the invaluable treatise by Messrs. Dupré and Thudichum ("On the Origin, Nature, and Varieties of Wine," Macmillan), a work

©1883 Nature Publishing Group

which will amply repay the technologist who consults it.

In conclusion we may add that this little book, though far from being "complete," or exhaustive of any one subject it treats of, is yet compiled with great care and discrimination by the Editor, and will be found of much value by those unable to consult larger treatises or original papers.

C. G.

Il Potentiale Elettrico nell' Insegnamento Elementare della Elettrostatica. Per A. Serpieri, Prof. di Fisica nella Università e nel Liceo Raffaelo di Urbino. (Milano, 1882.)

THIS treatise is an elementary exposition of the theory of the Potential in its application to Electrostatical Phenomena. It is founded, as we learn from the preface, on the author's lectures at the Raphael Lyceum of Urbino; and is intended for the use of the Lyceums and Technical institutes of Italy. It is well known to all who interest themselves in such matters that a promising young school of physicists has recently been springing up in Italy, and that those who wish to be abreast of their time can no longer neglect the Italian scientific literature. If the treatise of Prof. Serpieri may be taken as a fair specimen of the scientific instruction given in the secondary schools of Italy, it is clear that this harvest of physicists is due in no small degree to careful sowing.

The work deserves its title of Elementary, inasmuch as nothing is demanded of the student beyond a knowledge of elementary geometry and algebra, and a slight acquaintance with trigonometry. The author is mistaken, however, in supposing that an elementary treatment of electrical theory has not hitherto been attempted; for the English work of Cumming, published some six years ago, is almost identical in its aims with his own. Although Cumming's treatise is an excellent one in many ways, we cannot help thinking that the Italian one is better fitted for the purposes of elementary instruction. Prof. Serpieri appears to us to have happily kept the middle way alike between poverty and redundance of matter, and between excess of mathematical and excess of merely experimental detail.

In the first four chapters are developed the relation between potential and charge, and the theory of lines of force and equipotential surfaces. The fifth, sixth, and seventh chapters contain the theory of capacity, of electrostatic induction, and of the measure of potential. The eighth chapter contains a short sketch of the centimetre-gramme-second system of units, now universally adopted in accordance with the decision of the Electrical Congress at Paris; farther details on this all-important matter are given in one of the appendices, and a considerable number of numerical examples is provided to familiarise the student with the practical use of the system. The last seven chapters are devoted to the theory of condensers. Not only is the theory explained in a simple and interesting way, but abundance of experimental results and numerical illustrations are given to enable the learner to judge how far the mathematical theory represents the actual facts. The account of the experiments of Villari on the heat developed in the electric spark under various circumstances is interesting, and would probably be new to most English readers.

The main fault we have to find with Prof. Serpieri's work is that he has a tendency to cite second-hand authorities where it would have been quite as easy, more instructive for his youthful readers, and *more just* to give the original sources. Again, why of all the results concerning specific inductive capacity should he quote (p. 69) those of Gordon only, which have been precisely the most questioned, and why on the same page should the results of Boltzmann for the specific inductive capacity of gases not be coupled with the name of their author?

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

Hovering of Birds

IN your last number I observe an interesting letter on the "Hovering of Birds," by Mr. Hubert Airy. In that letter he refers to an opinion which I have expressed, that this "hovering" cannot be accounted for by the mere supporting agency of an upward current of air. The writer quotes this opinion as it was expressed in a letter to you (NATURE, vol. x. p. 262). But he does not seem to have read the fuller explanation which I have given on this subject in Chapter III. of the "Reign of Law." To that chapter I must refer your correspondent for an explanation, which shows that hovering can be, and is perpetually accomplished under the ordinary conditions of horizontal currents of air. It is very commonly performed (especially) by the whole tribe of Terns, or sea-swallows, over the surface of the sea, where there are no hills or mountains to deflect aërial currents from the usual horizontal course.

Mr. Airy himself uses words which indicate that this agency of upward currents is quite superfluous. He says: "It is easy to see that a bird, with the exquisite muscular sense that every act of flight demands and denotes, might so adapt the balance of its body, and the slope of its wing-surface to the wind, as to remain motionless in relation to the earth." He prefaces these words by these others: "given such a slant upward current." But no such "gift" is needed. The bird has only to slope his wing-surfaces to the current, and precisely the same effect is produced as if the current had been otherwise "sloped" upwards against a horizontal wing-surface. Mr, Airy's own letter contains an excellent explanation of this correspondence.

Cannes, France, January 29 ARGYLL

WITH respect to Mr. Hubert Airy's interesting note (vol. xxvii. p. 294), I beg to say that I have very often seen the kestrel hovering over the perfectly level meadows of Middlesex with obvious ease, where no undulation of the ground could possibly affect the currents of air. Of the twelve instances Mr. Airy enumerates, I see only six refer to hawks (species undetermined), so this fact must be taken into consideration; the conduct of rooks and crows under such circumstances seems to me to come under quite a different category from that of hawks, and in some instances gulls, thus "prospecting" for their prey. Mr. Airy does not ignore this aspect of the question, but I think that by confusing objective with subjective "hovering" he complicates his theory.

HENRY T. WHARTON

39, St. George's Road, Kilburn, N.W., January 27

Action of Light on India-rubber

IT may be in the recollection of some of your readers, that in 1876 I pointed out that the deterioration of ebonite surfaces was due to the combined action of light and air. Some time afterwards it was remarked to me that our laboratory (an old greenhouse) was too light, and as a result all our india-rubber tubes would rapidly deteriorate. This led me to submit some pieces of ordinary black india-rubber to the same treatment as the ebonite in the former experiments. On October 11, 1879, four pieces of caoutchouc connector of 5 mm. internal diameter were taken, two were placed in test-tubes plugged with cotton-wool, and the remaining two inclosed in hermetically sealed tubes. One of the sealed tubes, and one of those plugged with cotton wool were placed in a dark drawer, and the other pair in the laboratory window, with a north aspect, and in such a position that they were not under the influence of direct sunlight in the summer. To-day the specimens were examined. Both the sealed tubes were found to be slightly moist inside, and on opening them an organic odour, like that of an india-rubber shop, was perceived. The caoutchouc which had been exposed to air and light, was covered with a thin brown coating, and on being bent this coating cracked; the end which had been most exposed to the light was rather brittle, and could not be stretched

©1883 Nature Publishing Group